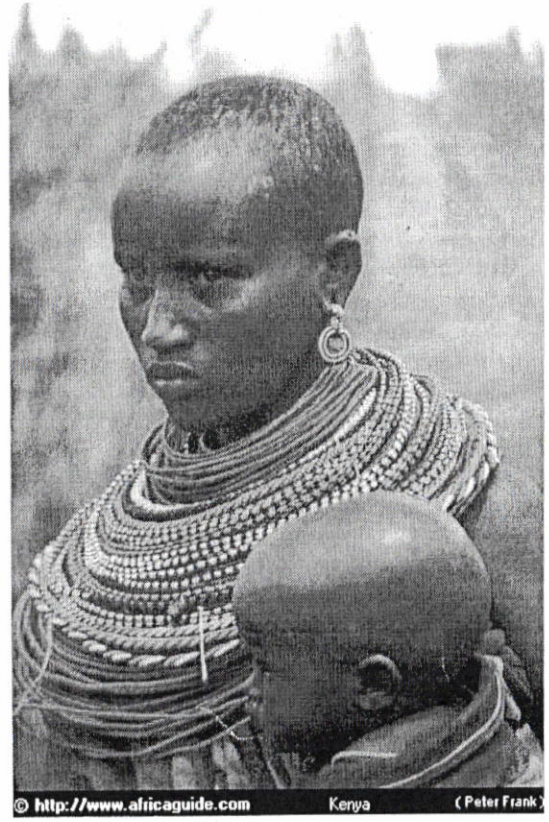
Biofuel and Genocide



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The biofuels movement is propelled by the powerful myth of progress; the myth that with the right technology, the right machines, the right fuel, we can go on living as we currently live. The myth of progress represents horrible misunderstanding of our past, and it equally misunderstands the future. Rather than leading to an age of renewable fuel, the biofuel movement is more likely to be the seed of a global scale genocide.

The myths of progress are deeply rooted. The reality of industrial development is that we have always used the most accessible fuels first, and then moved on to less accessible fuels. From the earliest days of human life on earth, biofuel was the only energy used other than human muscle power. Earlier civilizations discovered fossil fuel, but stuck with the use of firewood as it was more accessible and cleaner burning than coal or oil. In Roman times, oil was discovered, and a steam turbine was invented, but there was no need for such items in the economy of the time. [1]

As Europe was beginning to industrialize, firewood, wind and water power were relied on as the sole sources of energy. Steam-powered machines were invented and reinvented, but never actually used. They were not needed because biofuels, wind and water power were more easily accessible. The limit of the biofuel economy in Europe was reached in the mid 1600s. By then, deforestation was widespread, and all of the easily accessible wind and water power sites were being used. That is when the use of coal began in earnest. [2]

At first people dug shallow coal, or picked up coal along the beach. As this coal was exhausted, they started digging deeper and deeper mines. As the mines grew deeper and began to flood with water, more sophisticated water pumps were developed to pump out the mines. At first horses (another source of bio-power) were used to power the pumps, but in time the mines grew so deep that that rag-and-chain horse powered pumps became inadequate. There, more than a thousand years after the first known invention of the steam turbine, steam power finally found its practical application, running water pumps to pump out the mines.

There are two points to be derived from these historical insights. The first is that what we normally call progress is often a response to depletion. Industrialism exceeded the depletion limits of biofuels a long time ago. The second point is that the trajectory of using resources that are easily accessible first, and then turning to less accessible resources has pervaded throughout industrial development. Digging deep coal is a lot more expensive than cutting firewood. Would it make any sense to mine deep, low grade ore before mining shallow, high grade ore? Does it make any sense to mine at all if you can find what you need at the surface?

One might think that the United States, having conquered a continent, would

1 Africa, Thomas W., *Science and the State in Greece and Rome*, John Wiley and Sons, Inc., 1968
2 Wilkinson, Richard G., *Poverty and Progress, An Ecological Model of Economic Development*, Methuen and Co. Ltd. London, 1973

Is changing lifestyles impossibly difficult? It seems so because of the peculiarities of our current state of cultural evolution. We live in centralized states, and yet the social instincts of our species evolved in bands. We are taught the granite illusion that the mass society is our band. Especially as a result of the breakdown of any intimate human community in our time, we conform to the social lifestyle pressures of the mainstream society. The solution to changing the Western lifestyle is the simple impossible act of creating social networks that build social support outside of the mainstream in the context of a truly sustainable society. American individualism causes many modern ecologists to seek the single family homestead model, but that model is not really ecologically viable.

Looking at the real answers -- understanding them as more cultural than technological -- belies the use of biofuel as a "transitional" fuel. What are we transitioning to? Why would that "transition" be easier in the future than now? How is aiding and abetting the consumer society with yet another palliative, yet another support for the myth of progress, going to aid in a future "transition" to a sustainable society? The answers are clear enough. The transition will largely be back to past technologies, and that transition grows more difficult by the day. Now is the time.

The laws of physics hang over modern society like Damocles' sword. We scurry around under that sword, trying to convince ourselves that we can be saved from the global environmental impacts of our actions with reformism and palliatives. Biofuels, and biodiesel in particular, are the popular new kids on the block. The current biofuels movement will only exacerbate our difficulties. The real answers are both terribly difficult and idiotically simple. The real answers involve understanding how and why our culture, and its technology, change.[1] The real answers involve weaning ourselves from the milk of the corporate mother culture, and striking out in a cooperative movement that is truly sustainable.

1 Zeigler, Alexis, Conscious Cultural Evolution, Understanding Our Past, Choosing Our Future, Ecodem Press, Charlottesville, 1996, aslo at www.conev.org

needs flat plate or other modern designs to have an effective system. On average, solar hot water systems are expensive. Like photovoltaics, when they are applied to a single family homestead, they can offer a percentage reduction on energy use after the application of considerable capital and material investment. Again, this approach is only really viable for a few rich Westerners who want to feel better. It does not offer an order of magnitude reduction of resource usage, nor is it financially or ecologically feasible to apply on a global scale.

The primary purpose of the entire alternative energy movement in its current form is palliative, not ecological. The problem is the lifestyle, not the technology. The technologies are mostly ancient, and yet the American lifestyle pays no attention to even the simplest ancient technologies such as solar orientation.

For all of human history, up until very recently, human beings enjoyed a rich and deep social life in bands and villages. Many of the modern non-industrialized peoples have a mathematical understanding that often does not exceed counting to three. It becomes apparent when examining such peoples that one of, if not the primary, driving forces behind the evolutionary creation of human intelligence was not mechanical technology, but rather the need to maneuver within the intricate social fabric of the band, village, and extended kinship system. In very recent times we have abandoned that social fabric in favor of the single family home. The social band has been replaced by the television, and pets. Anthropological commentary aside, the ecological price of constructing single family houses, heating and cooling them, and transporting their occupants, regardless of the fuel or technology used, is astronomical.

If we Westerners could live, sharing resources as our predecessors did, as most of humanity still does, that in itself, regardless of the technology used, could affect an order of magnitude of reduction of resource use. If ten people live in a house, if those people walk or bike to their gardens and their jobs, they would have already created nearly an order of magnitude reduction of resource use. The really interesting part is when you look at the application of alternative technologies combined with lifestyle changes. Again, looking at solar, a residential solar hot water system, or a residential solar electric system, is expensive to install. But if that system is expanded only slightly to accommodate a few more people, the total cost per person, financial or ecological, plummets. The payback time shrinks dramatically. This may sound like a minor point. It is not. If civilization falls completely apart, then we will have to deal with that. In the meantime, people want and need access to hot water, some electrical machines, some access to transportation. The point is that achieving these goals in a truly sustainable manner is easy once one assumes a change in lifestyle, impossible if one superimposes them over our current lifestyle.

not have been subject to the same limitations of Europe in terms of resource constraints. But the same patterns of resource use and conversion still apply. In the U.S., biofuels were heavily applied to burgeoning industry after the revolutionary war. The eastern U.S. was heavily deforested in this period. As settlers moved west, other states suffered similarly. By the mid 1800s coal had become the dominant fuel because the biofuel economy had been overextended and depleted. [1]

In the intervening one hundred and fifty years, not only has population increased several fold, but also energy use per capita has grown much faster than population itself.[2] The net result is that we are using energy at a rate that cannot reasonably be obtained from biological sources. The U.S. is particularly profligate. According to David Pimentel; *The U.S. population consumes 40% more fossil energy than all the solar energy captured by harvested U.S. crops, forest products, and other vegetation each year.*[3] Any use of biofuels has to be added to our current demands on the Earth's biota that we already claim to produce food and fuel. For food, building materials, and firewood, we already harvest about 25% of the entire photosynthetic product of planet earth. If one looks at only the land area, we already harvest about 40% of the entire photosynthetic product of the land mass of the planet earth.[4] The energy used by modern industrial society, if harvested from biological sources, would represent an *additional* 25% of the Earth's entire photosynthetic product.[5] To produce biofuel on a scale to support even a fraction of current industrial output without reducing food production would require harvesting the planet's biological output at a rate that may or may not even be possible. If it could be done, it would come at extraordinary cost to every other living thing on the Earth.

That cost is not a far-off, theoretical matter. It is here and now. The new frontier of biodiesel can be found in the palm oil plantations of Malaysia. Thousands of acres of tropical forest land and all of the rare species that inhabit them are now being sacrificed to grow palm oil to feed the cars of the U.S. and Europe. The wild orangutan will likely soon be extinct because of biodiesel.[6] One might do well to keep in mind that while tropical rainforests are very rich environment hosting a diverse numbers of rare species, many other environments fit that description as well. The American grasslands were once one of the most diverse and rich environments in the world. While we have grown accustomed to

1 Wilkinson, ibid
2 http://dieoff.org/page224.htm
http://www.globalchange.umich.edu/globalchange2/current/lectures/energy1/energy1.html
3 Pimentel, D. and M. Pimentel. 1996. Food, Energy and Society. Boulder, CO: Colorado University Press.
4 Vitousek, P.M., et al, Human Appropiration of the Products of Photosynthesis, Bioscience, 36, 1986
5 Jeffrey S. Dukes, 2003. Burning Buried Sunshine: Human Consumption Of Ancient Solar Energy. Climatic Change 61: 31-44.
6 http://www.monbiot.com/archives/2005/12/06/worse-than-fossil-fuel/

corn growing where multitudinous birds and buffalo once roamed, any natural environment that is sacrificed for a biofuel monocrop production will result in species extinctions. And there will be many such extinctions.

In a broader environmental context, if we do not substantially alter any other aspects of our economy, any large new energy source would do more harm than good in the long run. How could that be? Our understanding is our society is very issue-oriented, not systematic. If you understand modern society as a system, then simply adding more energy does not improve the sustainability or long term viability of our society at all. This was demonstrated several decades ago by computer modeling developed by the Club of Rome.[1] (Their models have been vociferously attacked. The primary mode of attack has been gross misrepresentation of the original model. See *The Limits to Growth, The Thirty Year Update.*)[2] They created a model that attempted, to the the extent possible, to quantify the basic parameters of the modern industrial economy. Their model included resource availability, the ability of renewable resources to regenerate, the ability of the land and sea to absorb pollution. The overall shape of the model was shocking to many, though it should not have been. If you put yeast in a petri dish, and provide a food medium, the population of the yeast will grow geometrically, then collapse as food is exhausted and pollution builds up. The Club of Rome model for the planet Earth showed that, if human populations and resource consumption continues to grow geometrically, then ultimately we will overstretch and collapse.

The more subtle and interesting parts of the model come into play when you start to adjust the variables. What if the modelers grossly underestimated the availability of energy? They tried doubling energy reserves in the model. The growth curve was extended by a few years, but then it collapsed. Then they tried making energy reserves unlimited. The growth curve was extended still further, but only by a couple of decades, and then the system again collapsed. Let us be clear here, collapse in this case means a dramatic decline in both human population and living standards. That is a gruesome prospect.

How could it be that an infinite energy supply still leads to collapse? Because our world, and our global economy, is a complex system. There are many limits. Adding energy to industrial production does not increase the ability of the land and water to absorb pollution. Adding energy cannot infinitely expand our food supply. There are many limits, and removing any single limit (such as energy) means that the growth of the system is ultimately brought to a halt by other limits.

The SUV craze of recent years, coming as it did after the energy shortages of

1 Meadows, Donella H, The Limits to Growth, A Report for the Club of Rome's Project on the Predicament of Mankind, New York, Universe Books, 1974

2 Meadows, Donnella, Jorgen Rogers, Dennis Meadows, The Limits to Growth, the 30 Year Update, Chelsea Green, White River Junction, VT, 2004

just fine for centuries. But if any "alternative" technology is superimposed on our current social structure, the results will be equally disastrous regardless of the fuel.

This is not the time and the place to engage an in-depth analysis of each alternative fuel, but let us look for a moment at solar energy. No one can say when the first proto-human decided to construct the first primitive shelter with the doorway facing the sun to warm the shelter, but certainly by the time of the archaic civilizations, a pattern was well established in some areas of building shelters with a solar orientation. Socrates described principles of passive solar design.[1] Thus the passive solar hovel is at least a few thousand years old.

In modern times, solar energy has seen numerous improvements. For solar hot water there are batch collectors, flat plates, and now a variety of vacuum tube designs. Solar electric panels (photovoltaics) have seen a modest but steady improvement of both efficiency and cost. The liberal solar solution, like the biofuel solution, simply superimposes this technology right on top of our existing lifestyle. It doesn't work very well, neither from a fiscal nor an environmental perspective.

The average home uses so much electricity that powering it with photovoltaic panels is extremely expensive, costing tens of thousands of dollars. A few millionaires take that approach, but the environmental cost of producing photovoltaic panels is quite high, and in the end such measures are palliative, not ecological.[2] Some homesteaders take a different approach, establishing a serious conservation regimen before installing photovoltaic panels. That results in a solar installation that might cost ten or twenty thousand dollars, and the end result is little or no electricity use from the grid. But the batteries of solar electric systems are expensive and need replacing, and as we said, the cost of the panels is still quite high.

If we look at the global application of the American homestead model, it becomes quite clear that it is not feasible, nor is it by any measure sustainable. The reality is that we are currently using at least one order of magnitude (10 times) more energy than is by any measure sustainable.[3] The American homestead model offers a percentage reduction in impact, not an order of magnitude reduction.

The same analysis holds for solar hot water. The available supply of sunshine varies considerably in various locales. In some areas, simple, cheap batch collectors are a good financial investment even with current energy pricing. In most areas, one

1 http://www.uccs.edu/~energy/courses/160lectures/solhist.htm

2 Per-capita electricity use in the U.S. is about 12,331 kwh. Solar panels sell for 4-5$ per KW. The amount of energy such panels generate is highly geographically variable, but a 3X-5X multiplier (a 1KW panel will generate 3-5KW as a daily average) can generally be applied. To support of household of 2.5 people, needing 30,827 kwh, would cost over $38,000 for the panels alone, not counting other hardware or installation costs.

3 What constitutes a "sustainable" level of energy use is a highly debatable point. One interesting resource is Pimentel, D. et al, "Will Limits of the Earth's Resources Control Human Numbers?," (Environment, Development and Sustainability 1: 19-39, 1999, which can be found at http://dieoff.org/page174.htm

Hitler's camps?[1] The population growth of some African nations has been brought to a halt by HIV/AIDS. Why are we so aware of one holocaust and so ignorant of another? If and when transnational agribusiness moves into sub-Saharan African to produce biofuel on land vacated by convenient epidemics, will we in the West not applaud them for bringing economic development to the poor?

The modern commercial economy absolves all guilt. Everyone is supposed to produce, buy, and sell on the global market. And if there is a holocaust in that marketplace, there is no specific political leader or party to blame. And that is how genocide will grow, quietly, while the West is greatly saddened by natural disasters. The global agribusiness corporations will move onto the land where the skeletons lay quietly, and the Western media will applaud the corporate biofuel producers who are at last bringing economic development to impoverished nations. It is a bitter irony that this global genocide has its roots among those who consider themselves the most enlightened and progressive.

The biofuel genocide was seeded by a gross misunderstanding of the history of our industrial society, and by the desire to do something when we don't know what to do. We first have to correctly diagnose the problem. Modern society is not only ecologically unsustainable, it is politically polarized. In our time various groups have struggled, and won, civil rights for their own race, gender, or ethnic group. While these movements are laudable, they leave the basic structures of society unchanged. In as much as the energy issue reaches to the heart of industrialism, we cannot address it without a different kind of movement.

Current levels of consumption serve to keep the industrial machines running. We overproduce and over-consume at great expense to future generations. In the immediate sense, that overconsumption is driven by a desire to status, the need to be respected by our fellow humans. Thus our houses continues to grow larger even as the number of people living in them declines. Our cars get larger even as the environmental costs of them becomes more apparent every day. We tend to think of the desire to "keep up with the Joneses," the need for status, as in innate human trait. The technological fixes are more appealing than telling other people how to live, or challenging current political power. But a real understanding of technology and our current ecological situation displays the weaknesses of purely technological approaches.

The real answers involve changing how we live. We need to make ourselves conscious of how our culture evolves, and thus in turn make our culture conscious. The technological side of the problem is actually relatively easy, in the most part because it was solved a long time ago. The alternative technologies -- wind, solar, biofuel produced and consumed on a local and very limited scale -- have worked

1 http://www.avert.org/subaadults.htm

the 1970s, should make it obvious that simply adding new energy supplies to our current social system will only exacerbate our problems. If we have new energy sources, with no other substantive changes in our social and political order, we will simply use those energy sources to fuel automobiles, bulldozers, housing construction, and the manufacture of consumables. The biodiesel Hummer is now a reality. The "alternative" energy sources have been around for centuries. We currently have a plentiful energy supply. We are making poor choices, and adding new energy supplies, without addressing the root of that poor decision making, will only expand the scale and impact of those poor choices.

Given the obvious problems with our current decision making, why the headlong rush to find new fuel? Because the myth of progress is powerful, for liberals and conservatives alike. In the fall of 2004, congress passed a tax relief bill supporting biodiesel.[1] President Bush has spoken openly in favor of biodiesel, and has visited biodiesel plants to show his support.[2] How could it be that something so favored by a liberal fringe could also be favored by reactionary conservatives?

Ultimately, we live on a planet that is finite. As much as we choose not to recognize the limitations of the finite planet on which we live, we also ignore the extent of the inequalities that already plague our species. These two sets of issues are likely to work hand in hand to produce a biofuel genocide in the future.

We tend to think of Third World starvation as the result of natural disasters, poor local governance, and a history of underdevelopment. While there is not a single cause for modern inequality, we in the West tend to remain blissfully ignorant of the extent to which we benefit from the systems that perpetuate global poverty, or even national poverty.

There are a number of layers. The first is the direct suppression of productive capacity in the global South. It profits industrialized countries to suppress industrial development in the poorer nations while maximizing the output of raw commodities (mineral ore, bulk agricultural goods, timber) that are shipped north. Although industry has moved into some less-developed countries to take advantage of cheap labor, they have also violently resisted any infringement on their "intellectual property," or direct competition with their manufactured items.

The commercial interests of the industrialized world have also used the global financial system to encourage dependency of less developed nations. By encouraging these unindustrialized nations to take loans, the West insures that they will remain dependent in the future for further infusions of cash.[3] Even those countries that maintain a positive balance of trade, selling more than they are buying, are forced to take on a certain amount of debt simply to be able to move

1 http://www.biodiesel.org/news/taxincentive/
2 http://www.renewableenergyaccess.com/rea/news/story?id=29931
3 Perkins, John, Confessions of an Economic Hitma, Berrett-Koehler, 2004

goods. To move a ship full of goods requires taking on short term debt to pay for those goods. This financial leverage is then used for the profit of the industrialized West.

Even the money that is loaned to less industrialized countries finds its way back to Western banks. Sometimes corrupt officials in less developed countries simply embezzle the money and then reinvest it in Western banks. Often western loans are contingent on Western companies being hired to undertake development work. Then the debt repayments themselves, squeezed out of poorer nations, come back to Western banks. Even if the debt has been payed off several times over in interest, still Third World peoples are expected to pay.[1]

These are facts that are, at least in some circles, well known. But it doesn't stop there. While less developed nations are cut off from global trade because of their supposed fiscal irresponsibility, the U.S. public debt is now at 7% of GDP. How do we do that? Because oil money from the Middle East, money from China, Japan, and elsewhere pours into the U.S. to finance public debt through the purchase of treasury bonds.[2] And last but not least, there is a consistent flow of educated people who, after being educated at considerable expense in other nations, choose to migrate to the West where they are given preferential immigration status. The net result of all of these factors is that not only is do raw materials flow from the less industrialized nations to the industrialized nations, the net flow of money is from South to North as well.

What does all of this have to do with biofuel? Biofuel is ultimately a commodity produced from the land and sea. As much as we might think global hunger is the result of natural disaster, it is rather the result of inequality. The U.S. thinks of itself as the breadbasket of the world. The reality is that in some years we import more food than we export.[3] While poverty is endemic in Latin America, domestic meat consumption went down for many years while exports to the U.S. increased.[4] Across Africa, much of the best land is taken up by transnational corporations and other entities exporting luxury crops to Europe while local people starve.[5] In our modern world, people starve because of poverty, not natural disaster, and poverty is inextricably linked to the extreme accumulation of wealth in the West.

Nearly half of the U.S. population is overweight while hundreds of millions of humanity go hungry.[6] Already, the best agricultural land around the world is

1 George, Susan, A Fate Worse Than Debt, Grove Weidenfeld, NY, 1990
2 http://www.slate.com/id/2102433/
3 Stang, Patti, Conley, Stephen, USA Snapshots, Food Exports Are Cooking, USA Today, July 27, 1994
4 http://www.wrm.org.uy/bulletin/85/LA.html#Brazil
5 George, Susan, *How The Other Half Dies: The Real Reasons For World Hunger*, Rowman and Littlefield Publishers, 1977
6 http://207.57.8.38/hungerbasics/international.html#cite10

dedicated to producing excessive amounts of meat for Western markets. How could we think biofuels would somehow magically fly above current conditions rather than exacerbating them?

Our mythology of progress is racing headlong toward a collision with the reality that we live on a finite planet. Given that our human world is very polarized along lines or wealth and power, those who hold such wealth are likely to take every measure to hold on to their power, and make every justification for doing so. The high-tech dreams of a consumptive but sustainable society, suburbia powered by solar, wind, or nuclear, are illusions that will bear the brunt of simple physical impossibility. All of these technologies are very expensive to build, thus limiting their returns on money and energy invested. Many alternative technologies are simply too dispersed to produce energy on the scale demanded by the consumptive economy. As far as the physics of the real world are concerned, large-scale biofuel production is at least physically possible, if we set aside some of the land currently used for food.

As the constraints on other alternative fuels becomes more apparent, there will be a growing pressure to finance the consumptive economy with biofuel produced on a very large scale at the expense of global food production. The wealthier nations will, in the coming decades, through a policy of neglect and quiet interference, attempt to destroy populations in Africa and elsewhere in order to take their land for the sake of biofuel production. On our long list of technological illusions, biofuel is the only means of supporting the consumptive economy that would, from the standpoint of physics, actually work.

If you think that such a dire scenario is inappropriately alarmist, consider what has happened already. Anyone familiar with epidemiology can tell you that epidemic disease is inextricably linked to hunger. The Black Death of Europe, in which a third of the continental population died in the 1300s, was the result of widespread malnutrition that weakened the population. Europe recovered in time, and populations grew. Our forebearers were once again approaching the tipping point to disaster a couple of hundred years later. How did they save themselves? Colonialism. They conquered lands across the New World and Asia, at great expense to the native peoples, and established colonies that shipped food back to the homeland. That forestalled another Plague in Europe, but at the expense of tens of millions of human lives around the world.

In more modern times, we are all familiar with the genocide attempted by Hitler. But how many Americans are aware that the number of people who have died in sub-Saharan Africa from HIV/AIDS exceeds the number who died in

http://www.obesity.org/subs/fastfacts/obesity_US.shtml